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EXAMINER

FLANDERS, ANDREW C

ART UNIT PAPER NUMBER

2644

DATE MAILED: 01/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/087,691

Applicant(s)

LAU, KAI KWONG

Examiner

Andrew C. Flanders

Art Unit

2644

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 21-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims 1, 8 – 11, 15 – 16 and 20 have been considered but are moot in view of the new ground(s) of rejection necessitated by Applicant's amendment.

Claim Objections

Claim 1 is objected to because of the following informalities: Claim 1 recites the limitation "requires additional filter" which should apparently read "requires additional filtering". Appropriate correction is required.

Claim 21 is objected to because of the following informalities: Claim 21 recites the limitation "having DSP memory unit" which should apparently read "having a DSP memory unit" Claim 21 also recites the limitation "the controller configured to transferring" which should apparently read "the controller configured to transfer". Claim 21 also recites "producing an intermediate result" as well as "said intermediate results" It is unclear to the Examiner whether there is a single intermediate result or a plurality of intermediate results. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Milne (U.S. Patent 5,983,087) in view of Allred (U.S. Patent 6,721,428).

Regarding **Claim 1**, Milne discloses:

A method of maximizing a usage of memory wherein said memory includes a non volatile memory and a volatile memory in communication with a digital signal processor (DSP) (i.e. the remote DSP modules include non volatile memory and random access memory; col. 1 lines 56 – 57), comprising the steps of:

transferring a jump and lookup table from said nonvolatile memory to said volatile memory, said jump and lookup table providing a sequence of addresses to execute an equalization structure of said DSP (i.e. the remote DSP is configured by software stored in the flash memory and then transferred to RAM during system operation, the software provides up to 5 equalization features per speaker; col. 3 lines 35 – 39);

transferring a plurality of filter coefficients from said nonvolatile memory to said volatile memory, said plurality of filter coefficients provide filter characteristics for said equalization structures (i.e. a set of many coefficients are stored in each DSP module; col. 3 lines 45 – 51; all of the coefficient data is flashed into non-volatile memory; col. 4

lines 48 – 49; and the software stored in flash memory is transferred to RAM during system operation; col. 3 lines 35 – 39);

applying a set of filter coefficients to said equalization structure (i.e. transfer functions are programmed into the remote modules; col. 5 line 35);

filtering said input signal utilizing said equalization structure and producing an intermediate result(i.e. the audio data is processed according to the stored transfer functions and then converted to an analog signal; col. 2 lines 9 – 11).

Milne does not explicitly disclose wherein said intermediate result is stored for additional filtering and determining if the intermediate result requires additional filter [sic] and then selecting one of outputting said intermediate result as an equalized output signal if additional filter is not required and filtering said intermediate result if additional filtering is required.

Allred discloses:

Wherein said intermediate result is stored for additional filtering and determining if the intermediate result requires additional filter [sic] and then selecting one of outputting said intermediate result as an equalized output signal if additional filter is not required and filtering said intermediate result if additional filtering is required (i.e. a method for generating digital filters for equalizing a loud speaker, first data is provided for a tolerance range for a target response curve of the sound level verses frequency, second digital data is generated for an actual response curve of the sound level versus frequency for the loudspeaker, the first data is compared with the second data and it is determined whether the actual response curve is within the tolerance range, if not filters

are generated and applied to the digital data to generate third data for a compensated response curve and the frequency, amplitude and bandwidth are automatically optimized until the response curve is within the tolerance range; abstract).

It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the filtering technique taught by Allred to the DSP filters disclosed by Milne. One would have been motivated to do so to create a desirable system that would automatically re-optimize the equalization of an audio playback system that does not involve excessive complexity in implementation; col. 1 lines 50 – 60 of Allred.

Regarding **Claim 21**, Milne discloses:

A processing module (abstract) comprising:

a memory unit containing filtering data for producing a desired frequency response (the software stored in flash memory is transferred to RAM during system operation, the audio processing software provides 5 equalization features per speaker; col. 3 lines 35 – 39);

a digital signal processor (DSP) having DSP memory unit, an input for receiving an unfiltered signal and an output for outputting a filtered signal (i.e. the remote DSP modules include non volatile memory and random access memory; col. 1 lines 56 – 57; the audio data is processed according to the stored transfer functions and then converted to an analog signal; col. 2 lines 9 – 11);

a controller coupled to a memory unit and the DSP, the controller configured to transferring the filtering data from the memory unit to the DSP memory unit (i.e. a

microprocessor; Fig. 2 element 26; and the software stored in flash memory is transferred to RAM during system operation; col. 3 lines 35 – 39); and

the DSP being configured to produce an intermediate result by using the filtering data to filter the unfiltered signal (i.e. the audio data is processed according to the stored transfer functions and then converted to an analog signal; col. 2 lines 9 – 11).

Milne does not explicitly disclose that the DSP determines if the intermediate result requires additional filtering and performing one of outputting the intermediate results if additional filtering is not required and filtering said intermediate result if additional filtering is required.

Allred discloses determines if the intermediate result requires additional filtering and performing one of outputting the intermediate results if additional filtering is not required and filtering said intermediate result if additional filtering is required (i.e. a method for generating digital filters for equalizing a loud speaker, first data is provided for a tolerance range for a target response curve of the sound level verses frequency, second digital data is generated for an actual response curve of the sound level versus frequency for the loudspeaker, the first data is compared with the second data and it is determined whether the actual response curve is within the tolerance range, if not filters are generated and applied to the digital data to generate third data for a compensated response curve and the frequency, amplitude and bandwidth are automatically optimized until the response curve is within the tolerance range; abstract).

It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the filtering technique taught by Allred to the DSP filters disclosed by

Art Unit: 2644

Milne. One would have been motivated to do so to create a desirable system that would automatically re-optimize the equalization of an audio playback system that does not involve excessive complexity in implementation; col. 1 lines 50 – 60 of Allred.

Regarding **Claim 22**, in addition to the elements stated above regarding claim 1, the combination further discloses:

wherein the memory is a nonvolatile memory unit (col. 3 lines 5 – 10 in Milne).

Regarding **Claim 23**, in addition to the elements stated above regarding claim 2, the combination further discloses:

wherein the nonvolatile memory unit is an EEPROM (col. 3 lines 5 – 10 in Milne).

Regarding **Claim 24**, in addition to the elements stated above regarding claim 21, the combination further discloses:

wherein the DSP memory unit is a volatile memory unit (i.e. a RAM; col. 3 lines 35 – 37 in Milne).

Regarding **Claim 25**, in addition to the elements stated above regarding claim 24, the combination further discloses:

wherein the volatile memory unit is a RAM (i.e. a RAM; col. 3 lines 35 – 37 in Milne).

Regarding **Claim 26**, in addition to the elements stated above regarding claim 21, the combination further discloses:

a second memory unit configured to restore the intermediate result (it is inherent that the combination must contain a memory unit to store the intermediate result. The result must be stored in order for the comparison to be made in Allred as well as the secondary filtering to produce the third data).

Regarding **Claim 27**, in addition to the elements state above regarding claim 21, the combination further discloses:

wherein the filtering data comprises the filtering coefficients, a jump table and a lookup table (i.e. the remote DSP is configured by software stored in the flash memory and then transferred to RAM during system operation, the software provides up to 5 equalization features per speaker; col. 3 lines 35 – 39).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew C. Flanders whose telephone number is (571) 272-7516. The examiner can normally be reached on M-F 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on (571) 272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

acf



HUYEN LE
PRIMARY EXAMINER